AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims

Claim 1 (currently amended): A channel power control device, comprising:

a first multiple channel port;

a second multiple channel port;

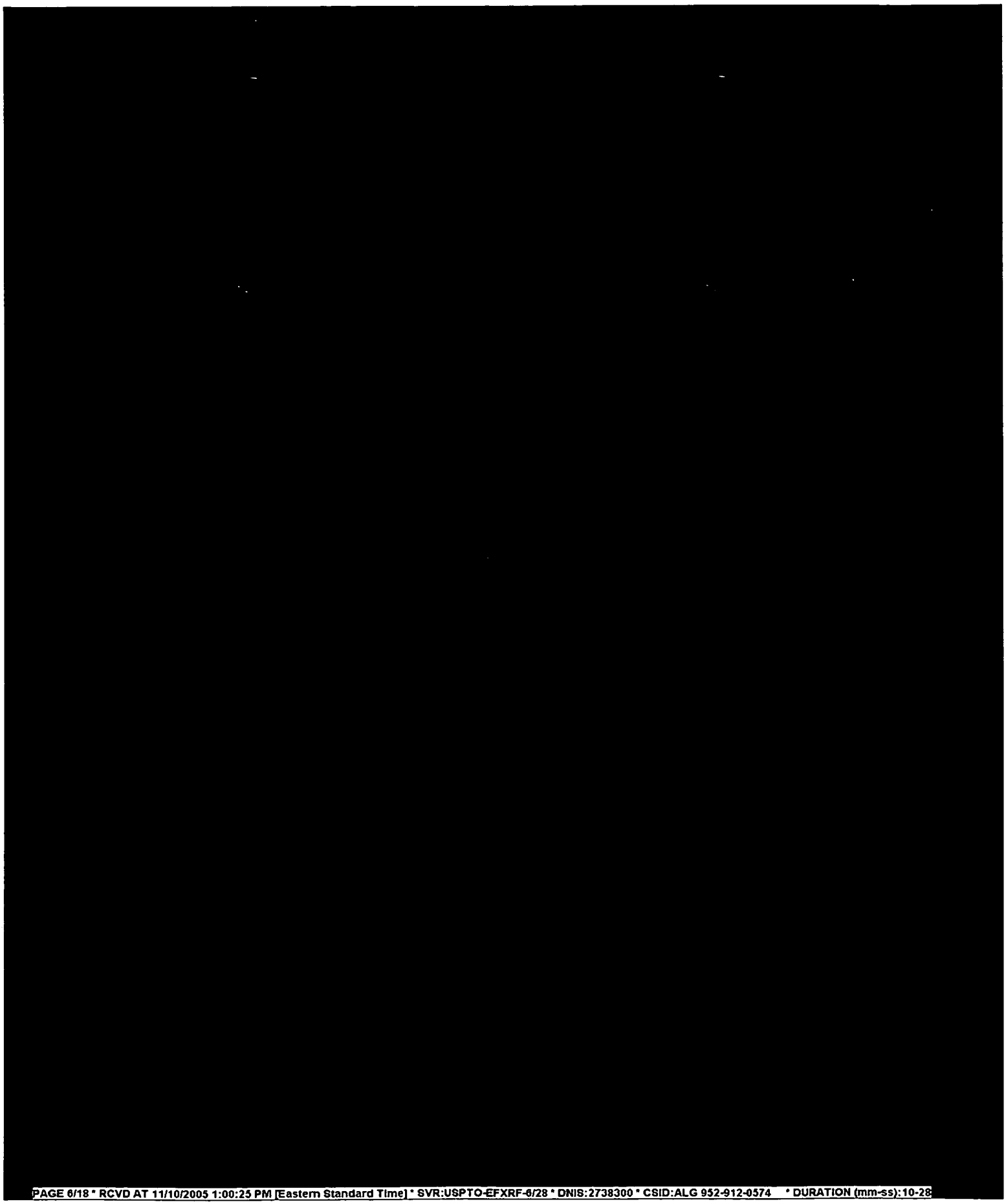
a dispersion region where individual optical channels propagating from the first ~~optical~~ multiple channel port are spaced apart;

a diffraction unit disposed between the first multiple channel port and the dispersion region, the diffraction unit defining wavelength-specific optical paths between the first multiple channel port and respective single channel ports of ~~the~~ a plurality of single channel ports, the diffraction unit including at least first and second transmissive diffraction elements that increase the spacing of the individual optical channels; and

a plurality of reflectors in the dispersion region disposed to reflect respective individual optical channels from the first multiple channel port to the second multiple channel port.

Claim 2 (original): A device as recited in claim 1, further comprising a first light focusing unit disposed on the plurality of wavelength-specific optical paths between the first multiple channel port and the diffraction unit.

Claim 3 (original): A device as recited in claim 2, wherein the first light focusing unit substantially collimates light propagating from the first multiple channel port towards



the plurality of single channel ports.

Claim 4 (original): A device as recited in claim 1, further comprising a second light focusing unit disposed on the wavelength-specific optical paths between the diffraction unit and the plurality of reflectors.

Claim 5 (original): A device as recited in claim 1, further comprising a third light focusing unit disposed between the diffraction unit and the second multiple channel port to focus a multiple channel signal from the diffraction unit to the second multiple channel port.

Claim 6 (original): A device as recited in claim 1, further comprising a polarization separation unit disposed between the first multiple channel port and the diffraction unit to separate light entering the device from the first multiple channel port into first and second components having mutually orthogonal polarizations.

Claim 7 (original): A device as recited in claim 6, wherein the polarization separation unit includes a polarization rotator disposed on a path of at least one of the components to rotate polarization of the at least one of the components so as to parallelize polarization directions of the first and second components.

Claim 8 (original): A device as recited in claim 1, further comprising a multiple channel waveguide coupled to the first multiple channel port.

Claim 9 (original): A device as recited in claim 1, wherein the reflectors have fixed values of reflectivity selected so as to impose a desired reflectivity profile across multiple channels received from the first multiple channel port.

Claim 10 (original): A device as recited in claim 9, wherein the plurality of reflectors includes different reflecting regions on a reflecting unit.

Claim 11 (original): A device as recited in claim 10, wherein the reflecting unit

includes a substrate having a reflecting surface and an absorbing layer disposed over the reflecting surface.

Claim 12 (original): A device as recited in claim 11, wherein the absorbing layer has different values of thickness at different reflecting regions of the reflecting unit.

Claim 13 (original): A device as recited in claim 1, further comprising a dynamically adjustable attenuator disposed between the diffraction unit and one of the first and second multiple channel ports.

Claim 14 (original): A device as recited in claim 1, wherein at least one reflector of the plurality of reflectors has a dynamically adjustable reflectivity.

Claim 15 (original): A device as recited in claim 14, wherein the at least one reflector having a dynamically adjustable reflectivity is coupled to receive reflectivity control signals from a controller.

Claim 16 (original): A device as recited in claim 14, wherein the at least one reflector having a dynamically adjustable reflectivity includes a mirror surface and a polarizer separated from the mirror surface, a liquid crystal layer being disposed between the polarizer and the mirror surface, a value of polarization rotation imposed by the liquid crystal layer on light entering the liquid crystal layer being adjustable.

Claim 17 (original): A device as recited in claim 16, wherein the device further includes a polarization separation unit disposed between the first multiple channel port and the diffraction unit to separate light entering the device from the first multiple channel port into first and second components having mutually orthogonal polarizations and a polarization rotator to rotate polarization states of at least one of the first and second components so that the polarization directions of the first and second components are parallel to a first polarization direction and the polarizer has a pass polarization direction that is parallel to the first polarization direction.

Claims 18-33 (canceled)

Claim 34 (new): A channel power control device, comprising:

a first multiple channel port;

a second multiple channel port;

a dispersion region where individual optical channels propagating from the first multiple channel port are spaced apart;

a diffraction unit disposed between the first multiple channel port and the dispersion region, the diffraction unit defining wavelength-specific optical paths between the first multiple channel port and respective single channel ports of a plurality of single channel ports, the diffraction unit including at least first and second transmissive diffraction elements;

a plurality of reflectors in the dispersion region disposed to reflect respective individual optical channels from the first multiple channel port to the second multiple channel port; and

a second light focusing unit disposed on the wavelength-specific optical paths between the diffraction unit and the plurality of reflectors.

Claim 35 (new): A channel power control device, comprising:

a first multiple channel port;

a second multiple channel port;

a dispersion region where individual optical channels propagating from the first multiple channel port are spaced apart;

a diffraction unit disposed between the first multiple channel port and the dispersion region, the diffraction unit defining wavelength-specific optical paths between the first multiple channel port and respective single channel

ports of a plurality of single channel ports, the diffraction unit including at least first and second transmissive diffraction elements;

a plurality of reflectors in the dispersion region disposed to reflect respective individual optical channels from the first multiple channel port to the second multiple channel port; and

a polarization separation unit disposed between the first multiple channel port and the diffraction unit to separate light entering the device from the first multiple channel port into first and second components having mutually orthogonal polarizations.

Claim 36 (new): A channel power control device, comprising:

a first multiple channel port;

a second multiple channel port;

a dispersion region where individual optical channels propagating from the first multiple channel port are spaced apart;

a diffraction unit disposed between the first multiple channel port and the dispersion region, the diffraction unit defining wavelength-specific optical paths between the first multiple channel port and respective single channel ports of a plurality of single channel ports, the diffraction unit including at least first and second transmissive diffraction elements;

a plurality of reflectors in the dispersion region disposed to reflect respective individual optical channels from the first multiple channel port to the second multiple channel port; and

a polarization separation unit disposed between the first multiple channel port and the diffraction unit to separate light entering the device from the first multiple channel port into first and second components having mutually orthogonal polarizations;

wherein the polarization separation unit includes a polarization rotator disposed on a path of at least one of the components to rotate polarization of the at least one of the components so as to parallelize polarization directions of the first and second components.

Claim 37 (new): A channel power control device, comprising:

a first multiple channel port;

a second multiple channel port;

a dispersion region where individual optical channels propagating from the first multiple channel port are spaced apart;

a diffraction unit disposed between the first multiple channel port and the dispersion region, the diffraction unit defining wavelength-specific optical paths between the first multiple channel port and respective single channel ports of a plurality of single channel ports, the diffraction unit including at least first and second transmissive diffraction elements; and

a plurality of reflectors in the dispersion region disposed to reflect respective individual optical channels from the first multiple channel port to the second multiple channel port;

wherein the reflectors have fixed values of reflectivity selected so as to impose a desired reflectivity profile across multiple channels received from the first multiple channel port; and

wherein the plurality of reflectors includes different reflecting regions on a reflecting unit.

Claim 38 (new): A device as recited in claim 37, wherein the reflecting unit includes a substrate having a reflecting surface and an absorbing layer disposed over the reflecting surface.

Claim 39 (new): A device as recited in claim 38, wherein the absorbing layer has different values of thickness at different reflecting regions of the reflecting unit.

Claim 40 (new): A channel power control device, comprising:

a first multiple channel port;

a second multiple channel port;

a dispersion region where individual optical channels propagating from the first multiple channel port are spaced apart;

a diffraction unit disposed between the first multiple channel port and the dispersion region, the diffraction unit defining wavelength-specific optical paths between the first multiple channel port and respective single channel ports of a plurality of single channel ports, the diffraction unit including at least first and second transmissive diffraction elements;

a plurality of reflectors in the dispersion region disposed to reflect respective individual optical channels from the first multiple channel port to the second multiple channel port; and

a dynamically adjustable attenuator disposed between the diffraction unit and one of the first and second multiple channel ports.

Claim 41 (new): A channel power control device, comprising:

a first multiple channel port;

a second multiple channel port;

a dispersion region where individual optical channels propagating from the first multiple channel port are spaced apart;

a diffraction unit disposed between the first multiple channel port and the dispersion region, the diffraction unit defining wavelength-specific optical

paths between the first multiple channel port and respective single channel ports of a plurality of single channel ports, the diffraction unit including at least first and second transmissive diffraction elements; and

a plurality of reflectors in the dispersion region disposed to reflect respective individual optical channels from the first multiple channel port to the second multiple channel port;

wherein at least one reflector of the plurality of reflectors has a dynamically adjustable reflectivity.

Claim 42 (new): A device as recited in claim 41, wherein the at least one reflector having a dynamically adjustable reflectivity is coupled to receive reflectivity control signals from a controller.

Claim 43 (new): A device as recited in claim 41, wherein the at least one reflector having a dynamically adjustable reflectivity includes a mirror surface and a polarizer separated from the mirror surface, a liquid crystal layer being disposed between the polarizer and the mirror surface, a value of polarization rotation imposed by the liquid crystal layer on light entering the liquid crystal layer being adjustable.

Claim 44 (new): A device as recited in claim 43, wherein the device further includes a polarization separation unit disposed between the first multiple channel port and the diffraction unit to separate light entering the device from the first multiple channel port into first and second components having mutually orthogonal polarizations and a polarization rotator to rotate polarization states of at least one of the first and second components so that the polarization directions of the first and second components are parallel to a first polarization direction and the polarizer has a pass polarization direction that is parallel to the first polarization direction.